

FIG. 1A

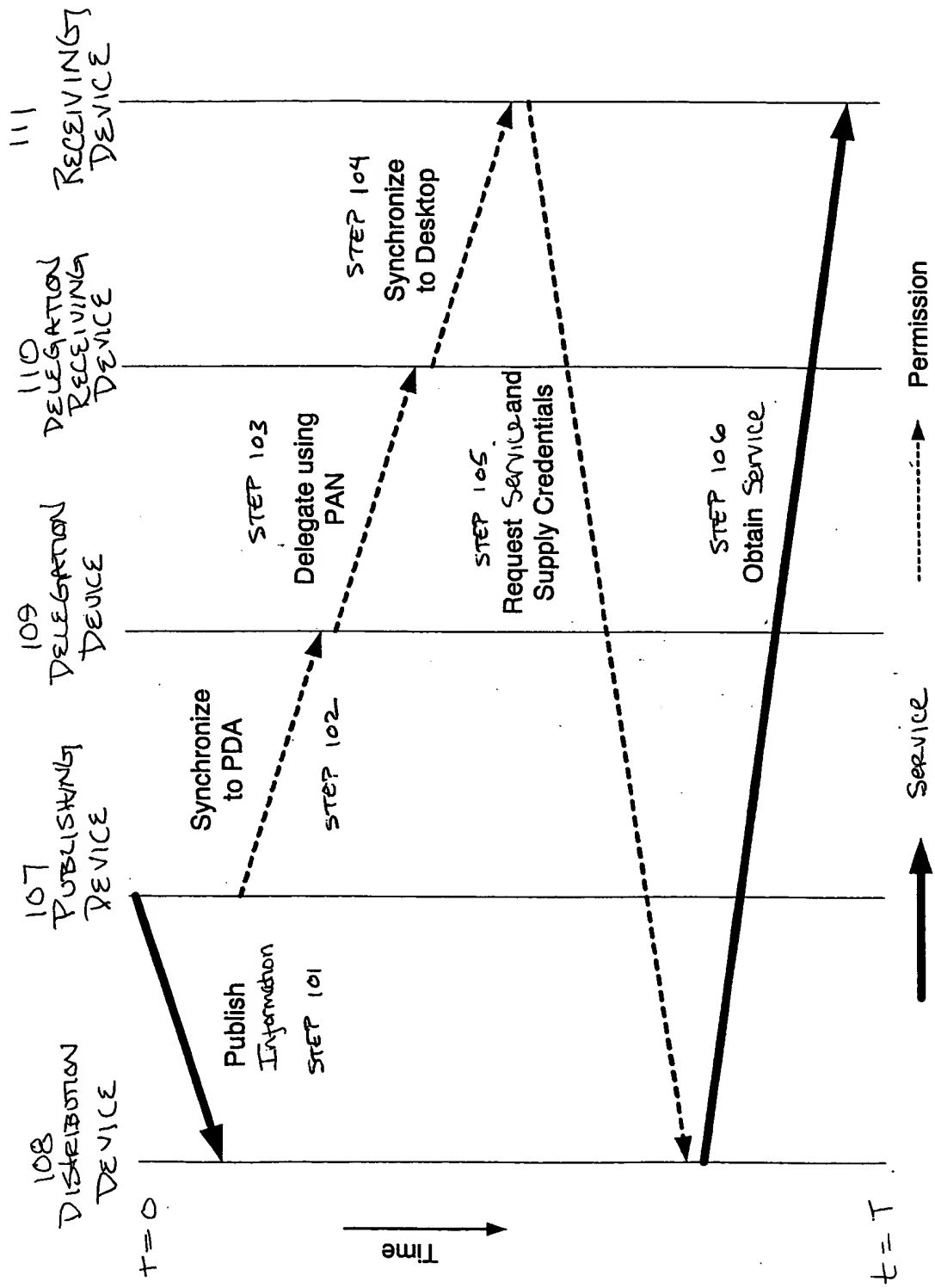
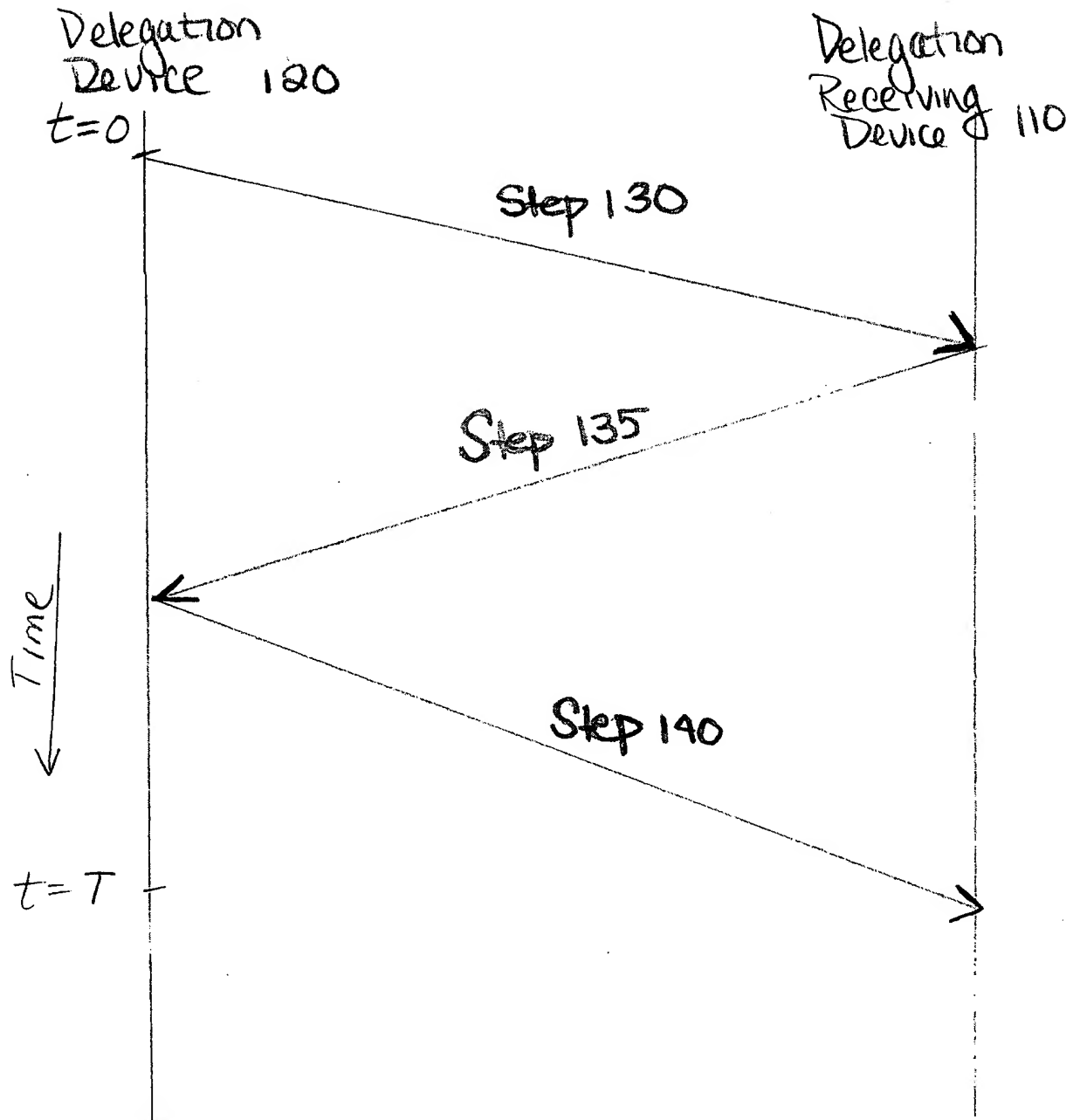


FIG. 1B



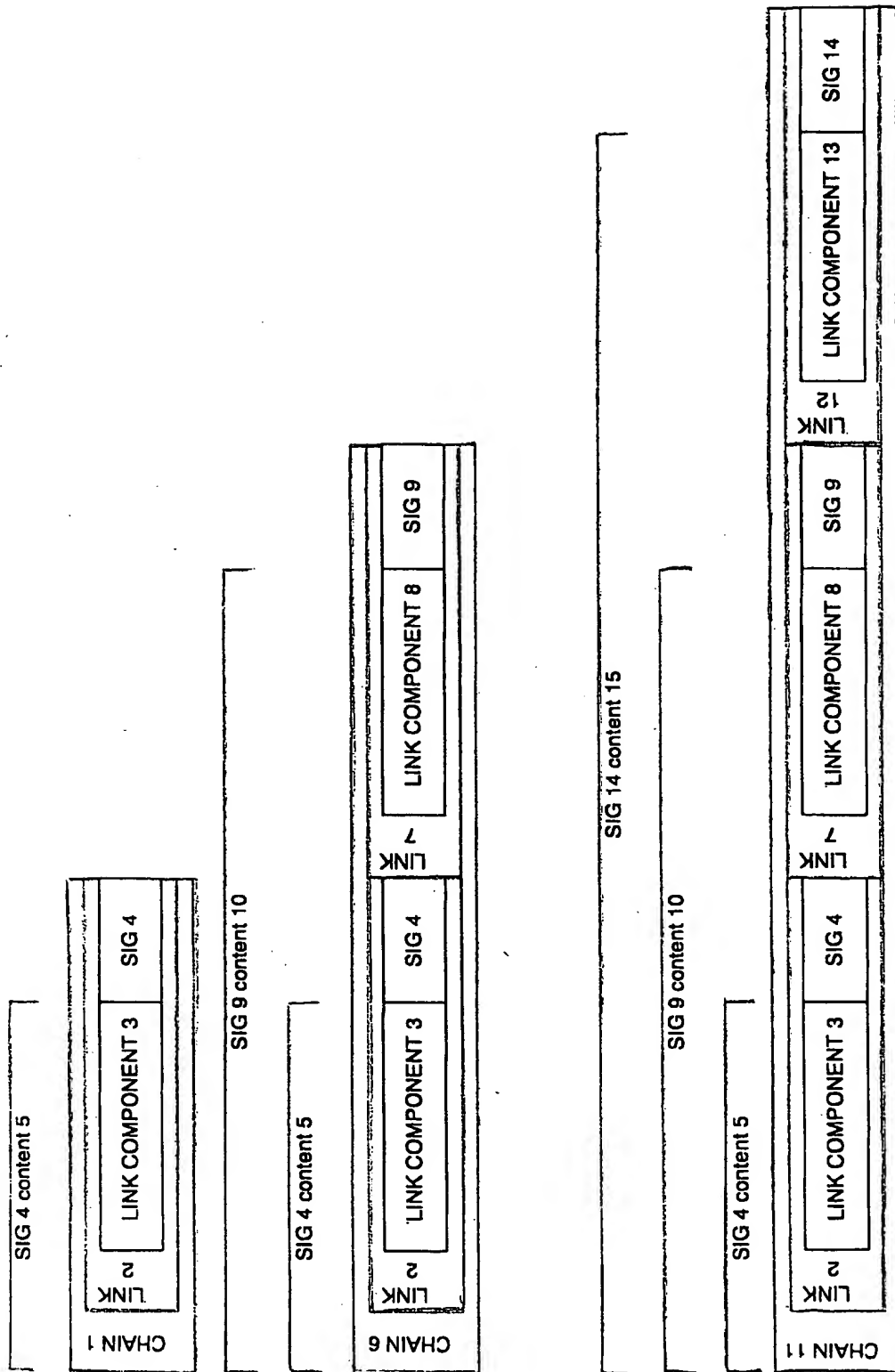
Data Structure Definitions in ASN.1

```
permissionChain ::= SEQUENCE OF permissionLink

permissionLink ::= SEQUENCE {
    permissionLinkComponent permissionLinkComponent,
    Signature OCTET STRING
}

permissionLinkComponent ::= SEQUENCE {
    Name OCTET STRING,
    Uri OCTET STRING,
    Description OCTET STRING,
    Note OCTET STRING,
    Version INTEGER,
    Src_p INTEGER,
    Src_q INTEGER,
    Src_g INTEGER,
    Src_pub INTEGER,
    Src_x509cert OCTET STRING,
    Src_email OCTET STRING,
    Subj_p INTEGER,
    Subj_q INTEGER,
    Subj_g INTEGER,
    Subj_pub INTEGER,
    Subj_x509cert OCTET STRING,
    Subj_email OCTET STRING,
    Delegate BOOLEAN,
    Read BOOLEAN,
    Write BOOLEAN,
    validFrom GeneralizedTime,
    validTo GeneralizedTime
}
```

FIG. 1C



# System Overview

FIG. 2A

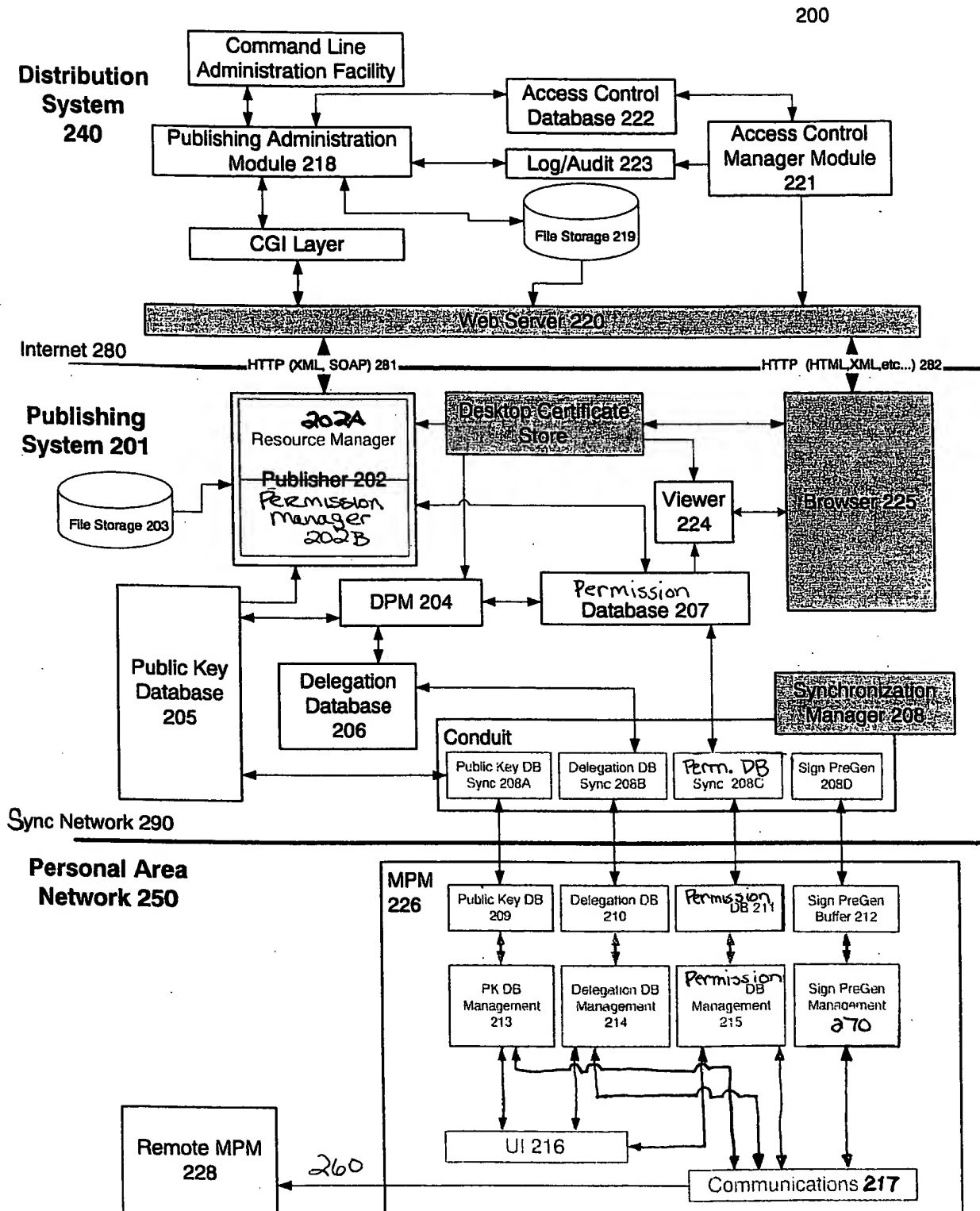


FIG. 2B

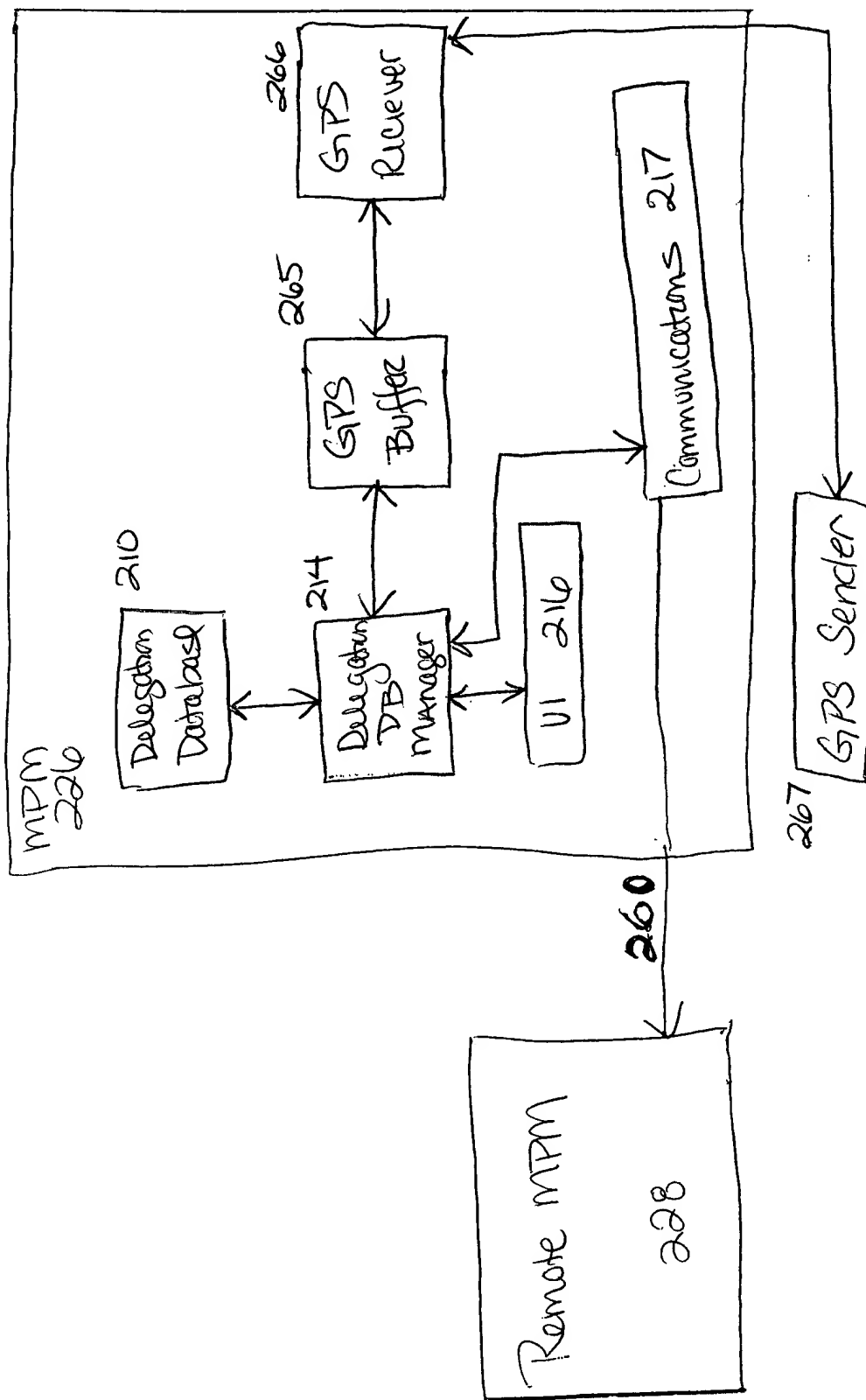
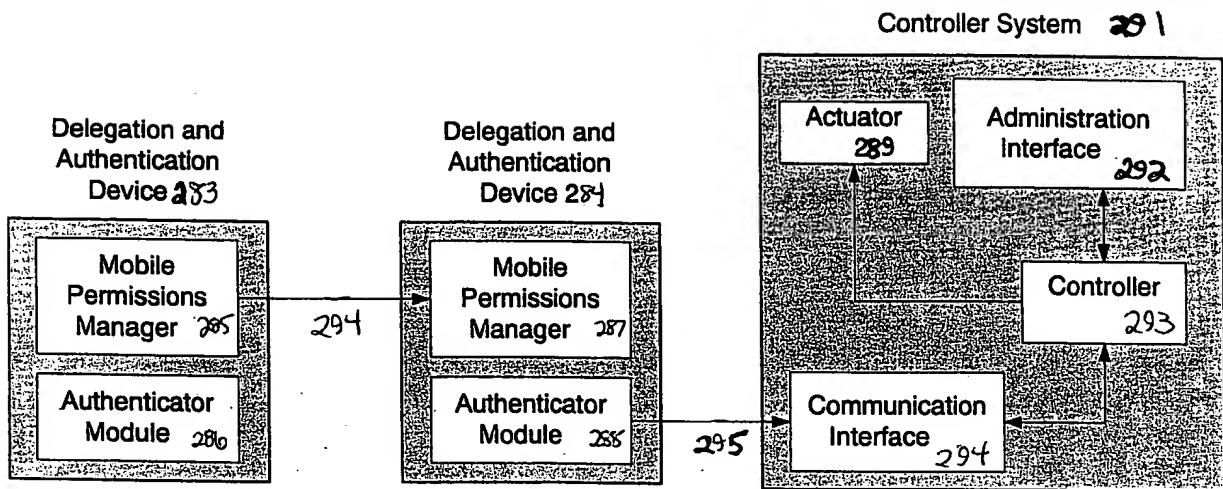


FIG. 2C



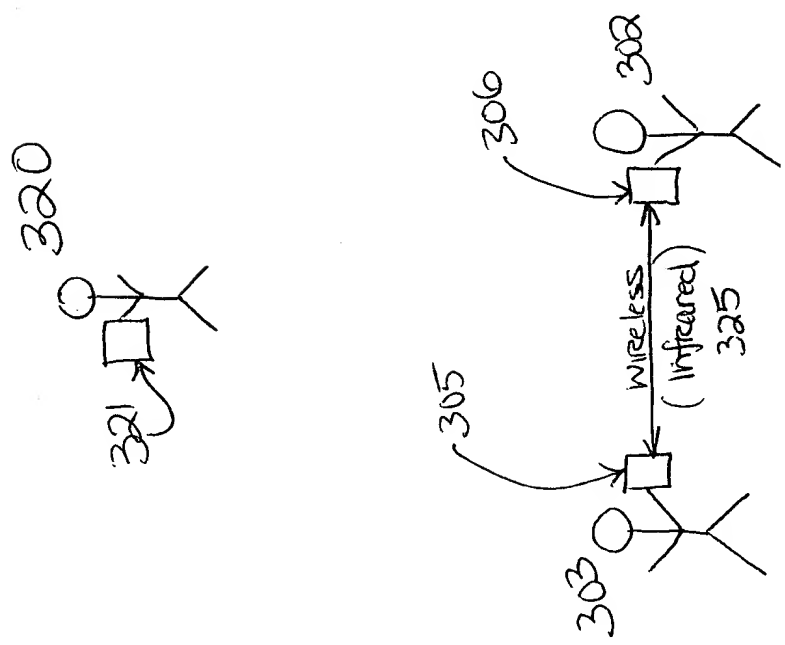


FIG. 3A

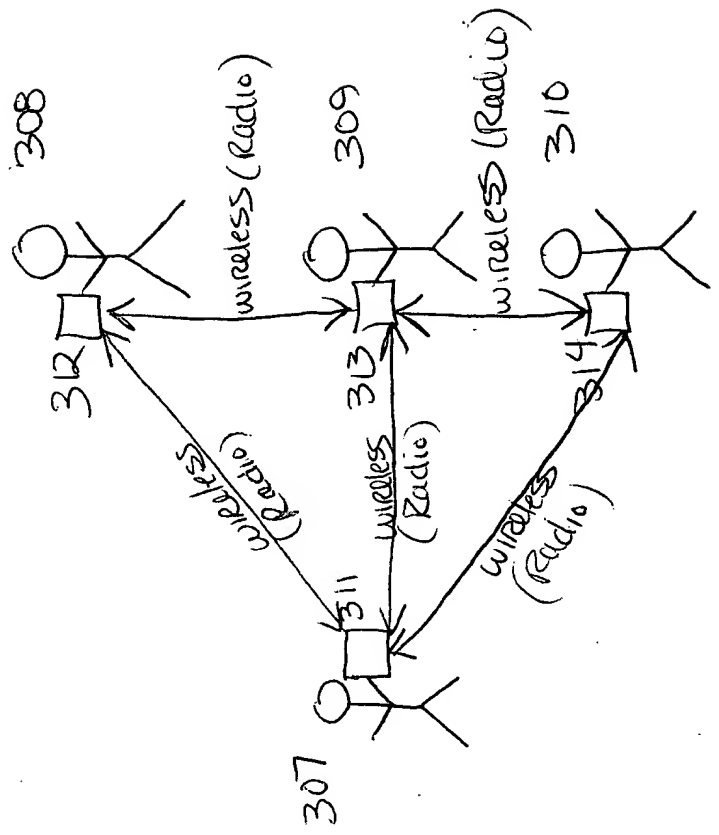


FIG. 3B



Fig. 4

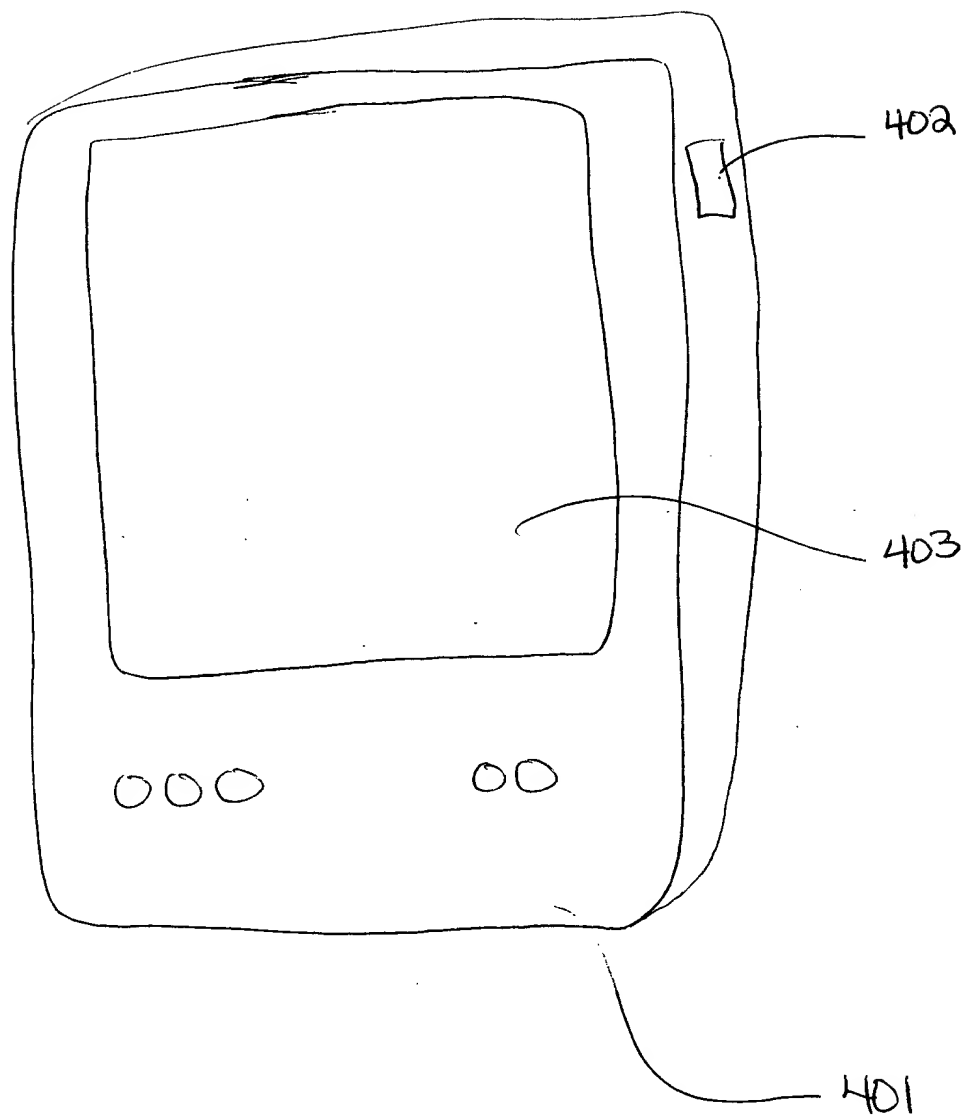


FIG. 5

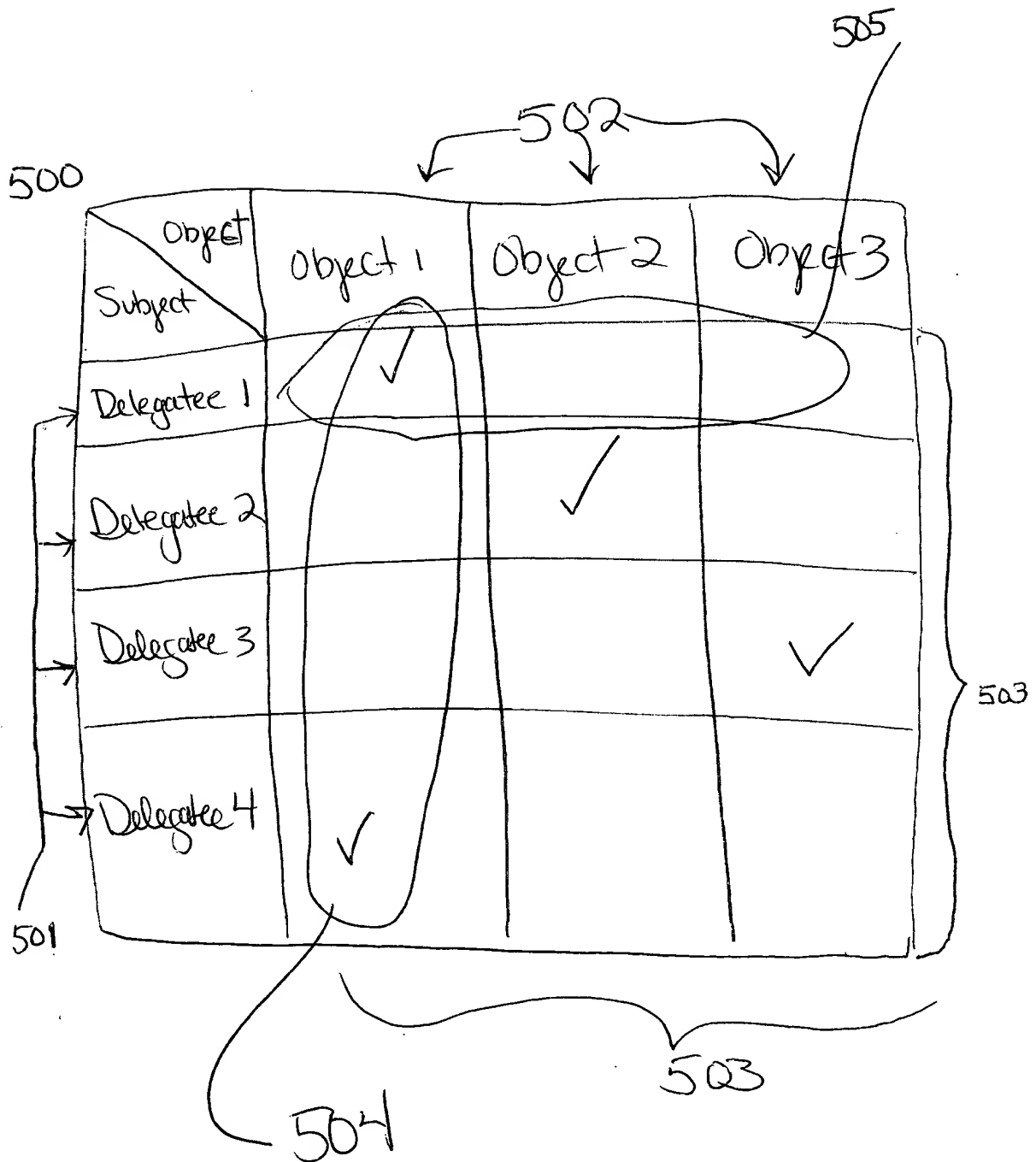
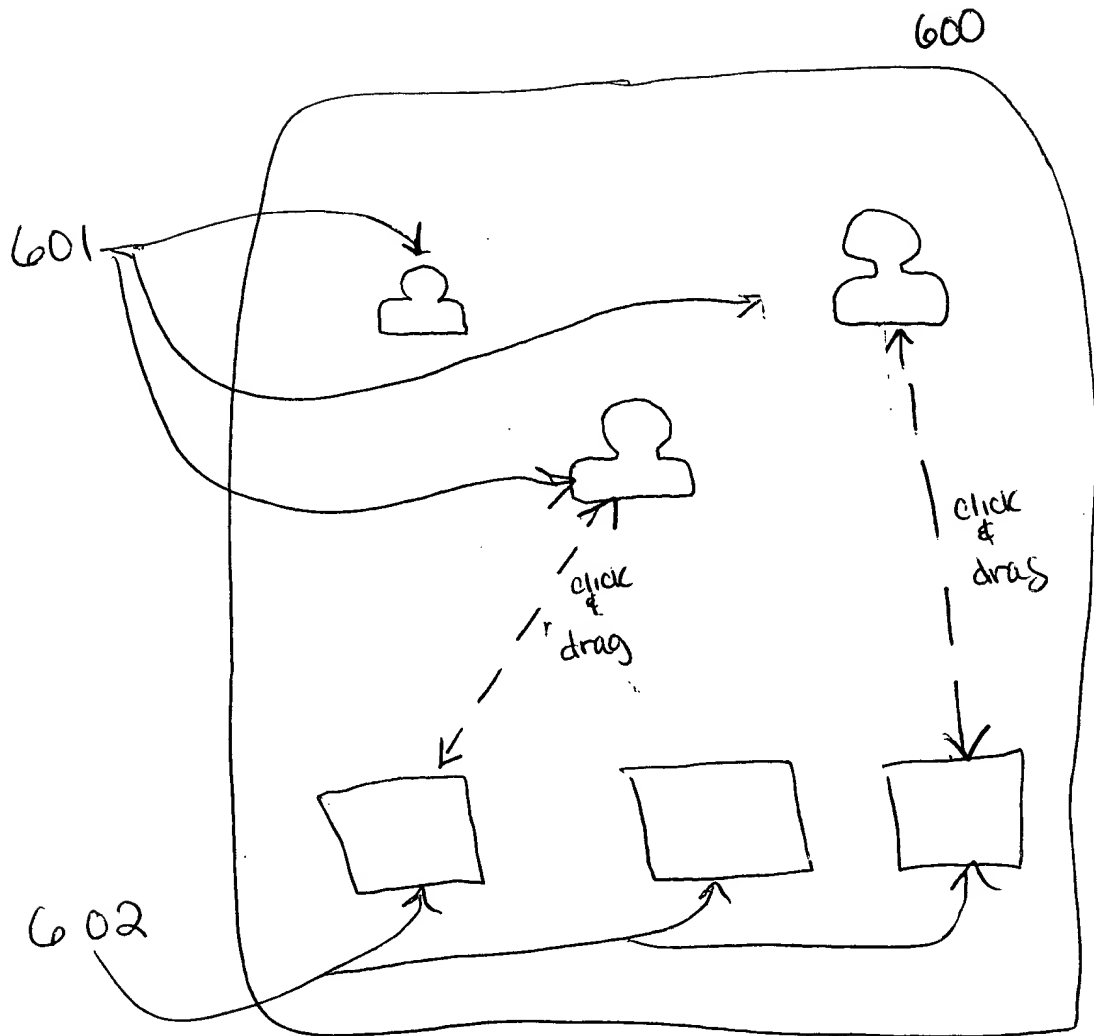


Fig. 6



Sending Permission as part of a header within an HTTP request.  
(see <http://www.ietf.org/rfc/rfc2616.txt>).

```
GET /resource/ HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg,
application/vnd.ms-powerpoint, application/vnd.ms-excel,
application/msword, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Vchain: 50U+F61olMMJzRmZs6QNRhxlUE3artX4ax56AJdJxYR7dzyPNglg+cwEOzzjT+
v8ywbpyuugQvjluZSSVDfkbje/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mLOnRKrXw
WuX6gW3gR76zVuIz0ylwS9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH8l046kLpiXB+O
CloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPKJx4w1A0d9GdGAqRycOGFoXtzyzps
+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVGNqJemvVURHlDdhnMzYzF
ZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzFlvfyFPfYYH75ONHjMdDr5qrVbSm4hK2GFZ
IVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3hpKa5Pd+NZELIwQ4FWlWgrIzL+jw
Le1CfDk2V4SntsK+CFxBVGBU6dWpQYe2x0Bjat5yjbgyfXdz/vXfNxjHoAiUYwt4ZNwK0+
UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00cl6a4M82DUtE6JhrX6U
fR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3VllbxTyofETq9WofZ3u+bomL8WgchTd
/QPyHMaky37tXEhrjZxUkgJtI0oAl2kVaTDERIwBnhQYM3mzp48n8wCq8qH2JP78DSOQwC
HMolJQPmjfaOxaCR5wE9mhJGHjtTOPXx3GkLN1NuZYq7tbxYznGNJ2VgwUPpCQppohcWmF
B1779OcTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3mvDXSAJ8Wx66XiIEJmtzil
1Dpnt0phJpCDAPyM2X02bJGrPnimSbUsaELQWdMmtUyczy5TDIlpqjKMNUlytlHdmN2jly
2+hHplkzgxXKhlI/JtC97X2GBbm7n1UnICG6sAbxq6lBHX5sNs1TzWChjYhtFlMuCezT
UmflLBgGPgh6Uv3oyUVoasRmsKi6qbweddxXfZD3uFR/iJNLUzwnt3/PJwTPJPJHJ+Sia
/hkB9+alMZxfSkMQaBpAE7/BfzRHs+09fDTL+kBFd00w0fvkTo9AlfVF99wiAJ0hZt7q+e
GWkPi5SRO+9/T7l0r7wNvC9NELRfsziq/v+8LMl79yjjCm0chAZTv09iA8i28gQotzjdfX
1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8hHDxgluK
RaAF1xQboHeRlZ9GQHoia9ucQORhrbIu0S2Oafj99QjmszP3gQ64Pw+EakfS+1YQYbauY9
Z+8bRf+G8JnhRZlvcyu5ylRW74goguqs6BSf6NcuC3rBJhf30xn15l/a8SraFtzUR4rv+e
qjQyE=
Connection: Keep-Alive
Host: www.websitexyz.com
HTTP/1.0 200 OK
Content-Length: 16485
Content-Type: text/html
<html><head><title>WebsiteXYZ</title>
```

FIG. 7.

Sending the permission as part of a "cookie" within an HTTP request  
(see <http://www.ietf.org/rfc/rfc2616.txt> and <http://www.ietf.org/rfc/rfc2109.txt>).

```
GET /resource/ HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg,
application/vnd.ms-powerpoint, application/vnd.ms-excel,
application/msword, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Cookie: Vchain=50U+F61olMMJzRmZs6QNRhx1UE3artX4ax56AJdJxYR7dzyPNglg+cw
EOzzjT+v8ywbpyuugQvjluZSSVDfkbje/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mL
OnRKrXwWuX6gW3gR76zVuIz0ylwS9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH8l046k
LpiXB+OCloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPkXj4w1A0d9GdGAqRycOGF
oXtyzpS+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVGNqJemvVUrHlDD
hnMzYzFZfTqeZ6sYAZCvsAiCYghRB6fK9JjV/vj9CzFlvfyFPfYYH75ONHjMdr5qrVbSm
4hK2GFZIVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3hpKa5Pd+NZELIwQ4FWlWg
rIzL+jwLe1CfDk2V4SntsK+CFxBVGbU6dWpQYe2x0Bjat5yjbgyfXdz/vXfNxxjHoAiUYwt
4ZNwK0+UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00c16a4M82DutE
6JhrX6Ufr08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lBxTyofETq9WofZ3u+bomL
8WgchTd/QPyHMaky37tXEhrjZxUkgJtI0oA12kVaTDERIwBnhQYM3mzp48n8wCq8qH2JP7
8DSOQwCHMolJQPMjfaOxaCR5wE9mhJGHjtT0pXx3GkLN1NuZYq7tbxYznGNJ2VgwUPpCQp
pohcWmFB1779OcTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3mvDXSAJ8Wx66XiI
EJmtzil1Dpnt0phJpCDAPyM2X02bJGrPnimSbUsaELQWdMmtUyczy5TDI1lpqjKMNUlytlH
dmN2jly2+hHplkzgxXXKhilI/JtC97X2GBbm7nlUnICG6sAbxq6lBHX5sNs1TzWChjYhtF
lMuCezTUmfl1LBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUzwnt3/PJwTPJp
JHJ+SIa/hkB9+alMZxfSkMQaBpAE7/BfzRHs+09fDTL+kBFd00w0fvkTo9AlfVF99wiAJ0
hZt7q+eGwKPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv09iA8i28gQ
otzjdFX1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8h
HDxgluKRaf1xQboHeRlZ9GQHoia9ucQORhrbIu0S2Oafj99QjmszP3gQ64Pw+EakfS+lY
QYbauY9Z+8bRf+G8JnhRZlvcyu5y1RW74goguqs6BSf6NcuC3rBJhf30xn151/a8SraFtz
UR4rv+eqjQyE=
Connection: Keep-Alive
Host: www.websitexyz.com
HTTP/1.0 200 OK
Content-Length: 16485
Content-Type: text/html
<html><head><title>WebsiteXYZ</title>
```

FIG. 8

Sending the permission as part of a URL

http://www.websitexyz.com/resource/?Vchain=50U+F61olMMJzRmZs6QNRhx1UE3a  
rtX4ax56AJdJxYR7dzyPNglg+cwEOzzjT+v8ywbpyuugQvjluZSSVDfkbje/C+NV8sLfp5d  
3eaTykzeP+siJxl7wg3njzn2mLOnRKrXwWuX6gW3gR76zVuIz0y1wS9bZzSiu+ImN/SaHRS  
3eqBFPL7Ye0lJzin4jH8l046kLpiXB+OCloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybf  
SXPkXx4wlA0d9GdGAqRycOGFoXtyzps+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPv  
uevICZHVgwnqJemvVUrHlDDhnMzYzFZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzF1vfyF  
PfyYH75ONHjMdDr5qrVbSm4hK2GFZIVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3  
hpKa5Pd+NZELIwQ4FWlWgrIzL+jwLe1CfDk2V4SntsK+CFxBVGBU6dWpQYe2x0Bjat5yjbq  
YfXdz/vXfNxjHoAiUYwt4ZNwK0+UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10  
FeCHZ00c16a4M82DUtE6JhrX6UFR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V11bxT  
yofETq9WofZ3u+bomL8WgchTd/QPyHMaky37tXEhrjZxUkgJtI0oA12kVaTDERIwBnhQYM3  
mzp48n8wCq8qH2JP78DSOQwCHMo1JQPmjfaOxaCR5wE9mhJGHjtTOpXx3GkLN1NuZYq7tbx  
YznGNJ2VgwUPpCQppohcWmFB1779OcTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3  
mvDXSAJ8Wx66XiIEJmtzil1Dpnt0phJpCDAPyM2X02bJGrPnimSbUsaELQWdMmtUyczy5TD  
I1pqjKMNUlytlHdmN2jly2+hHplkzgxXKkhilI/JtC97X2GBbm7nlUnICG6sAbxq61BHX5s  
Ns1TzWChjYhtFlMuCezTUmflLBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUz  
wnt3/PJwtPJpJHJ+Sia/hkB9+a1MZxfSkMQaBPAE7/BfzRHs+09fDTL+kBFd00w0fvkTo9A  
lfVF99wiAJ0hZt7q+eGWkPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv  
09iA8i28gQotzjdFX1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a  
75Jxyoa8hHDxgluKRaaFlxQboHeR1Z9GQH0ia9ucQORhrbIu0S2Oafj99QjmszP3gQ64Pw+  
EakfS+lYQYbauY9Z+8bRf+G8JnhRZlvcyu5ylRW74goguqs6BSf6NcuC3rBJhf30xn15l/a  
8SraFtzUR4rv+eqjQyE=

FIG. 9

Fig. 10

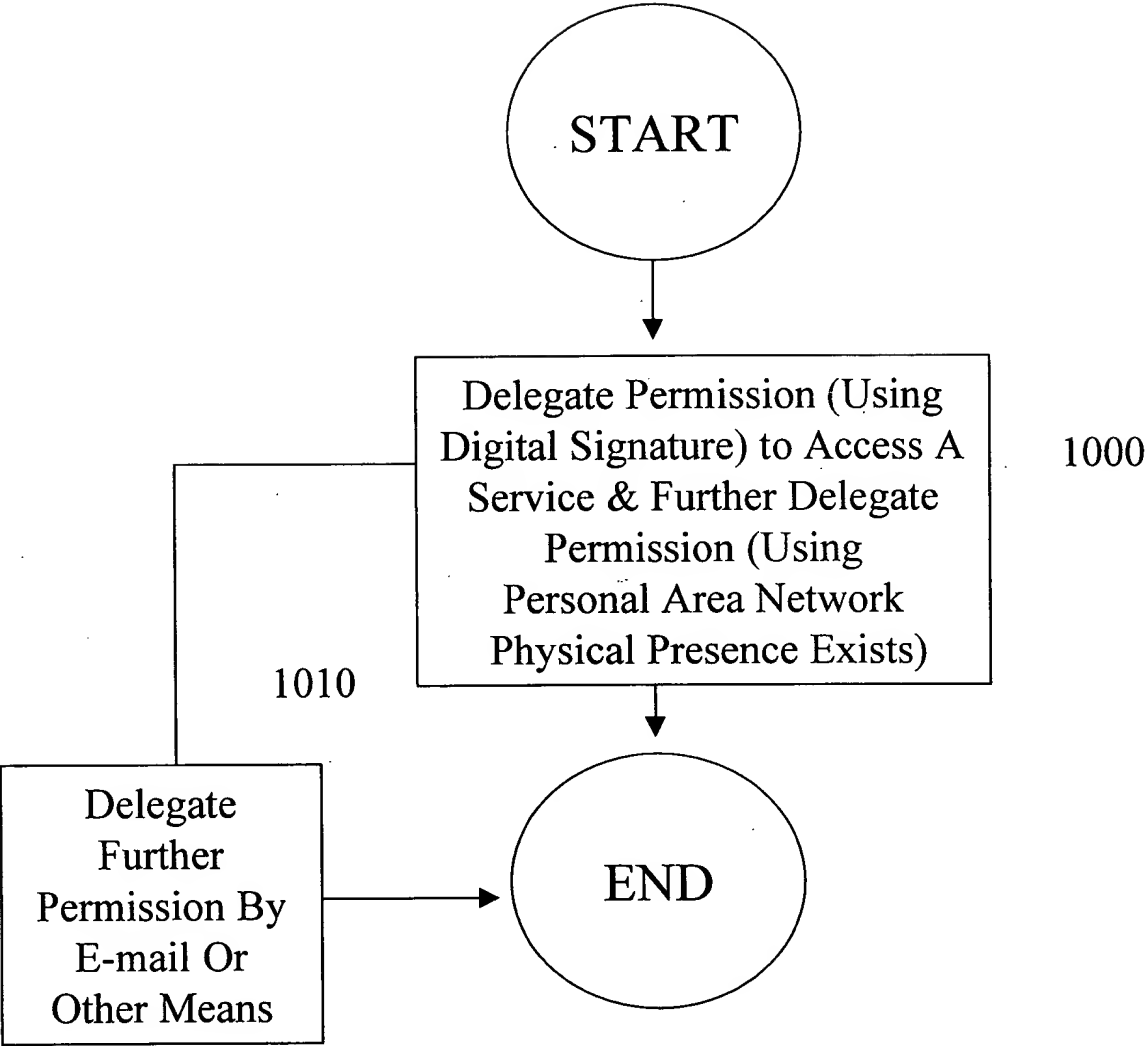


Fig. 11

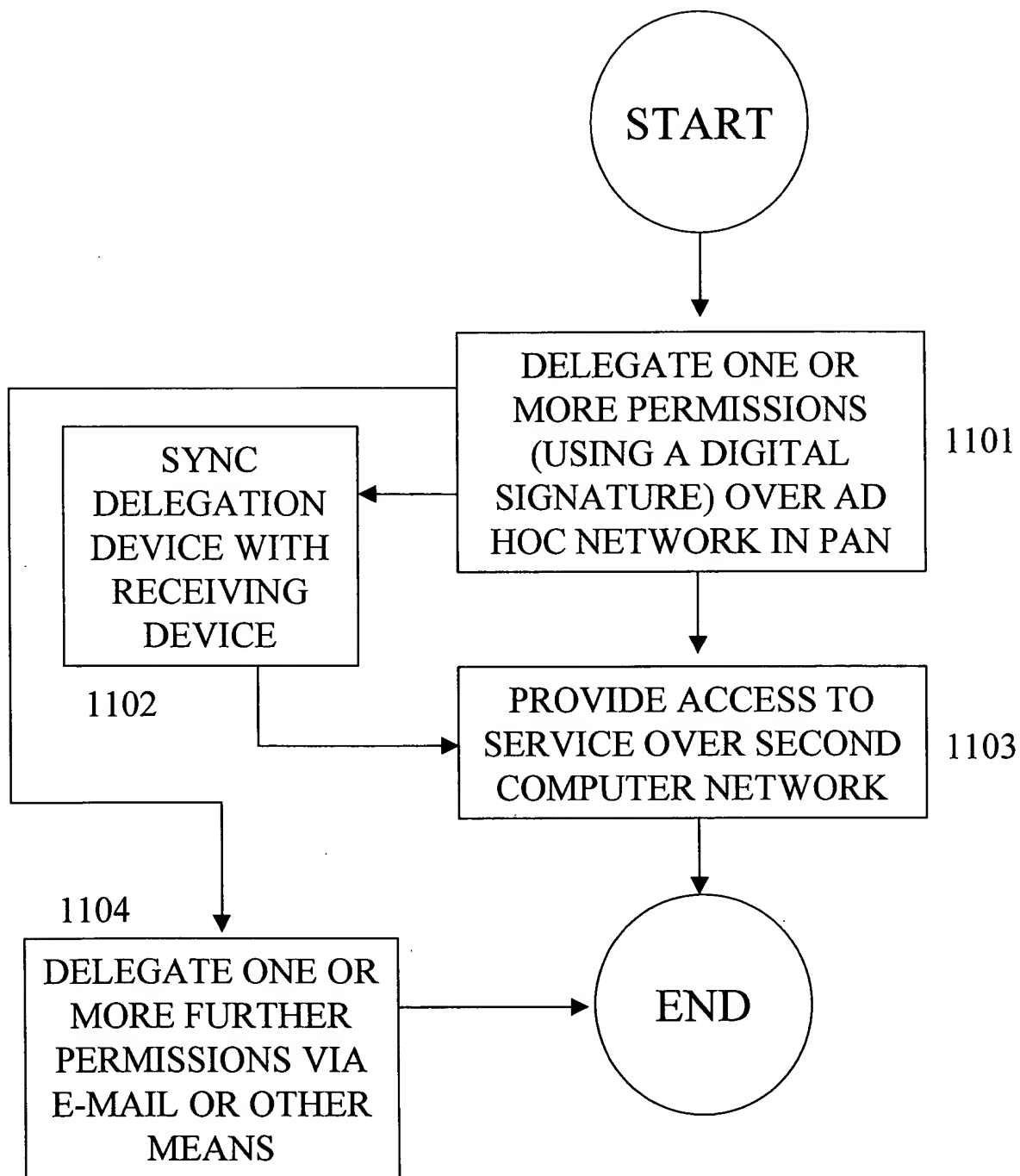




Fig. 12

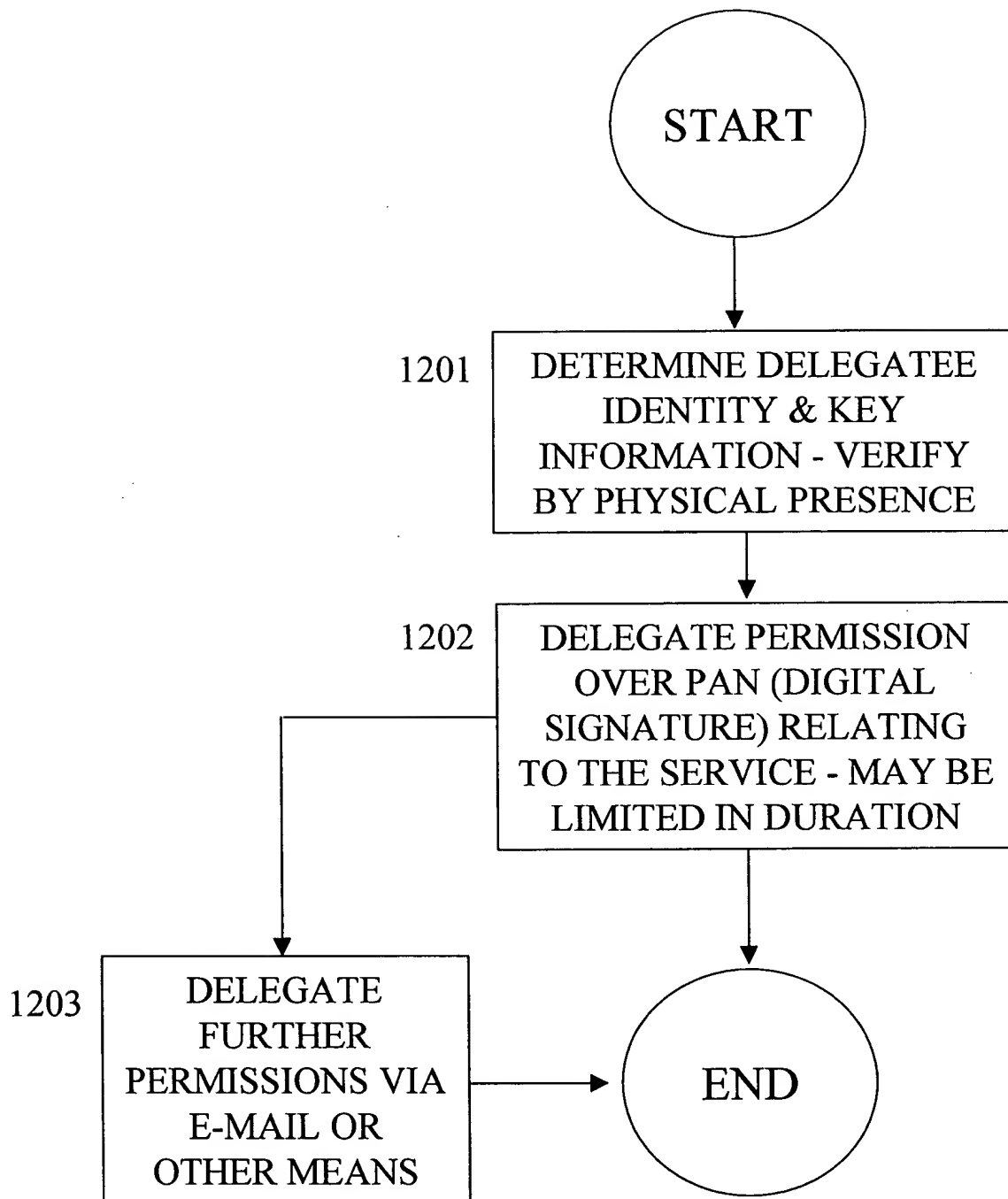


Fig. 13

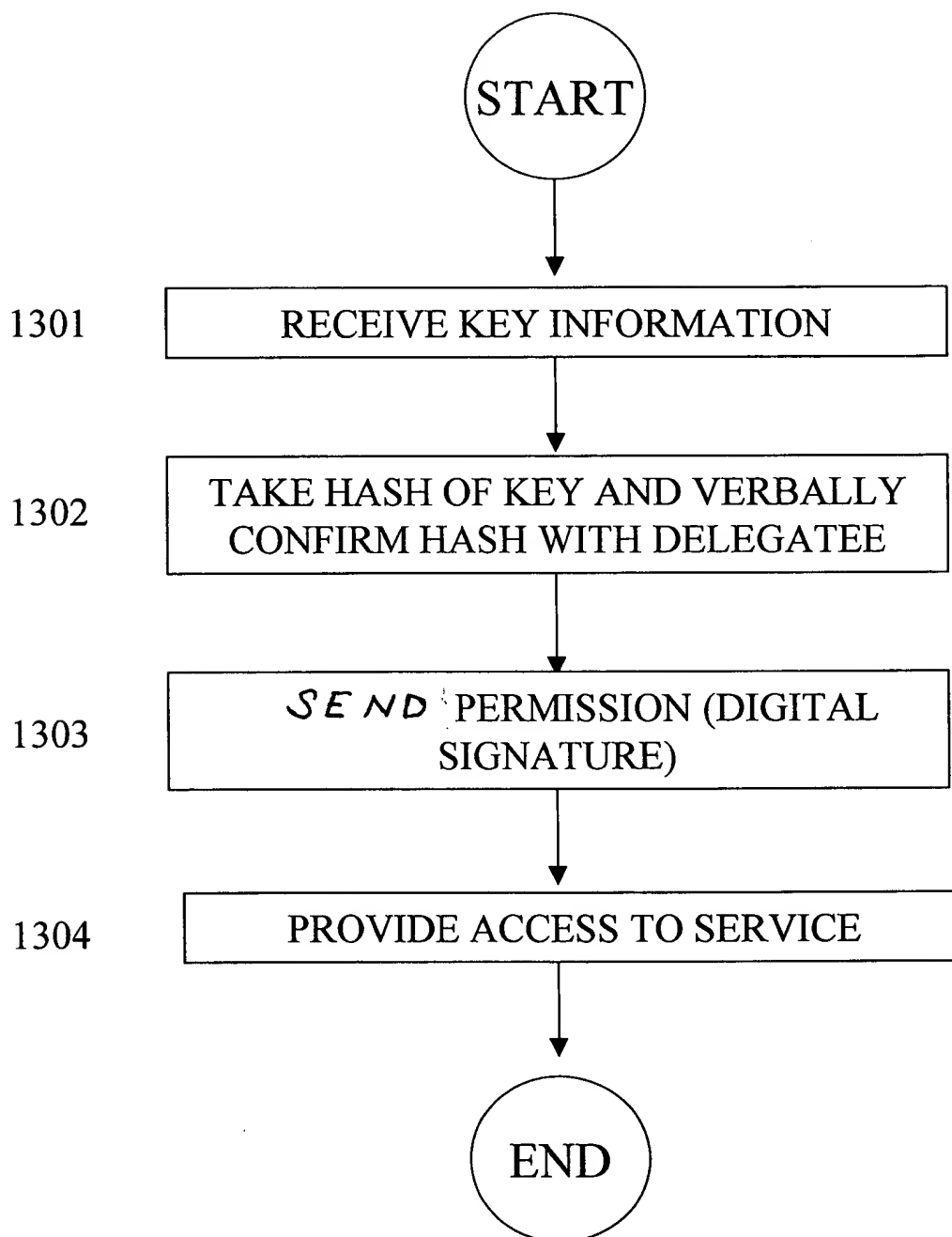


Fig. 14

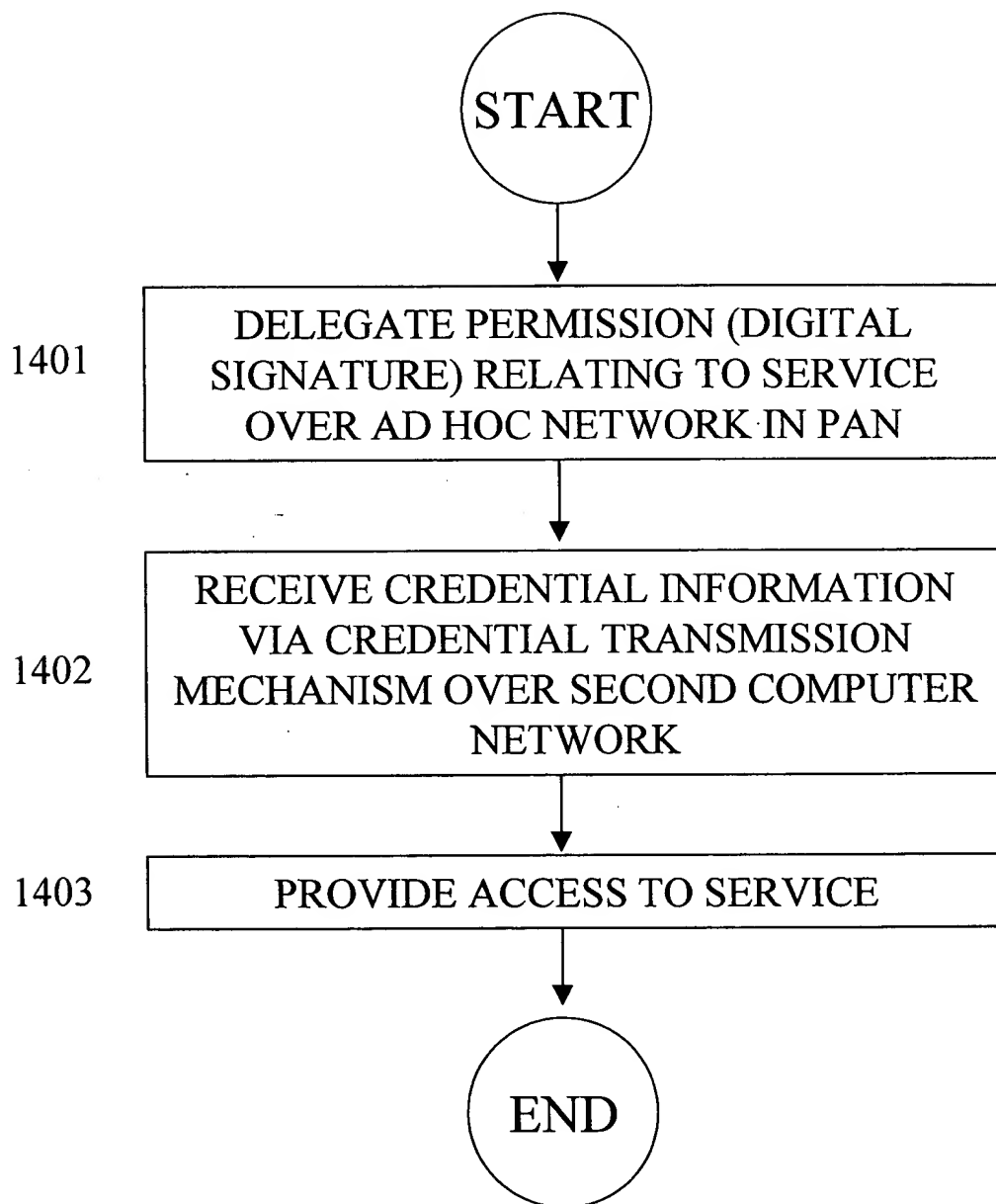


Fig. 15

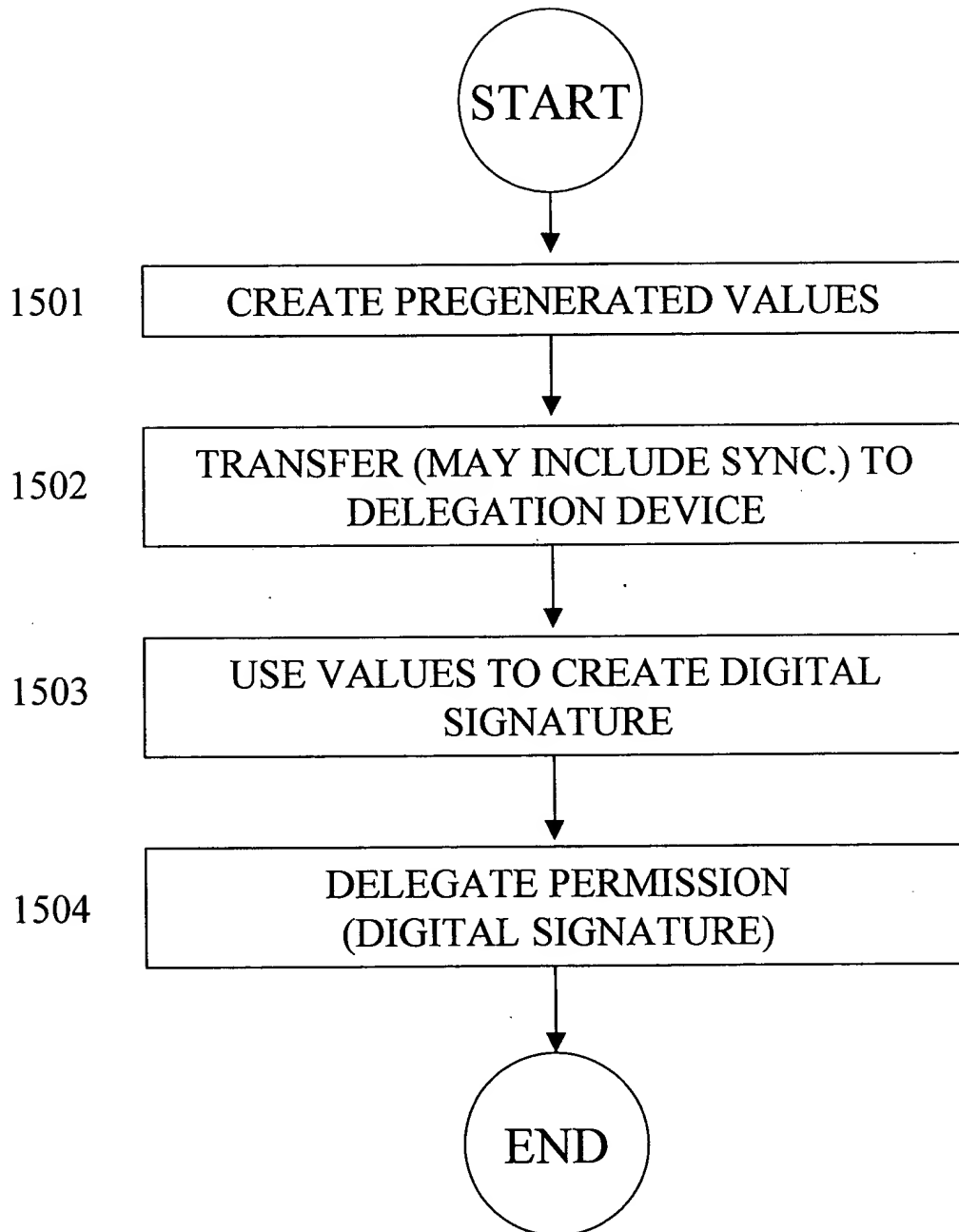


Fig. 16

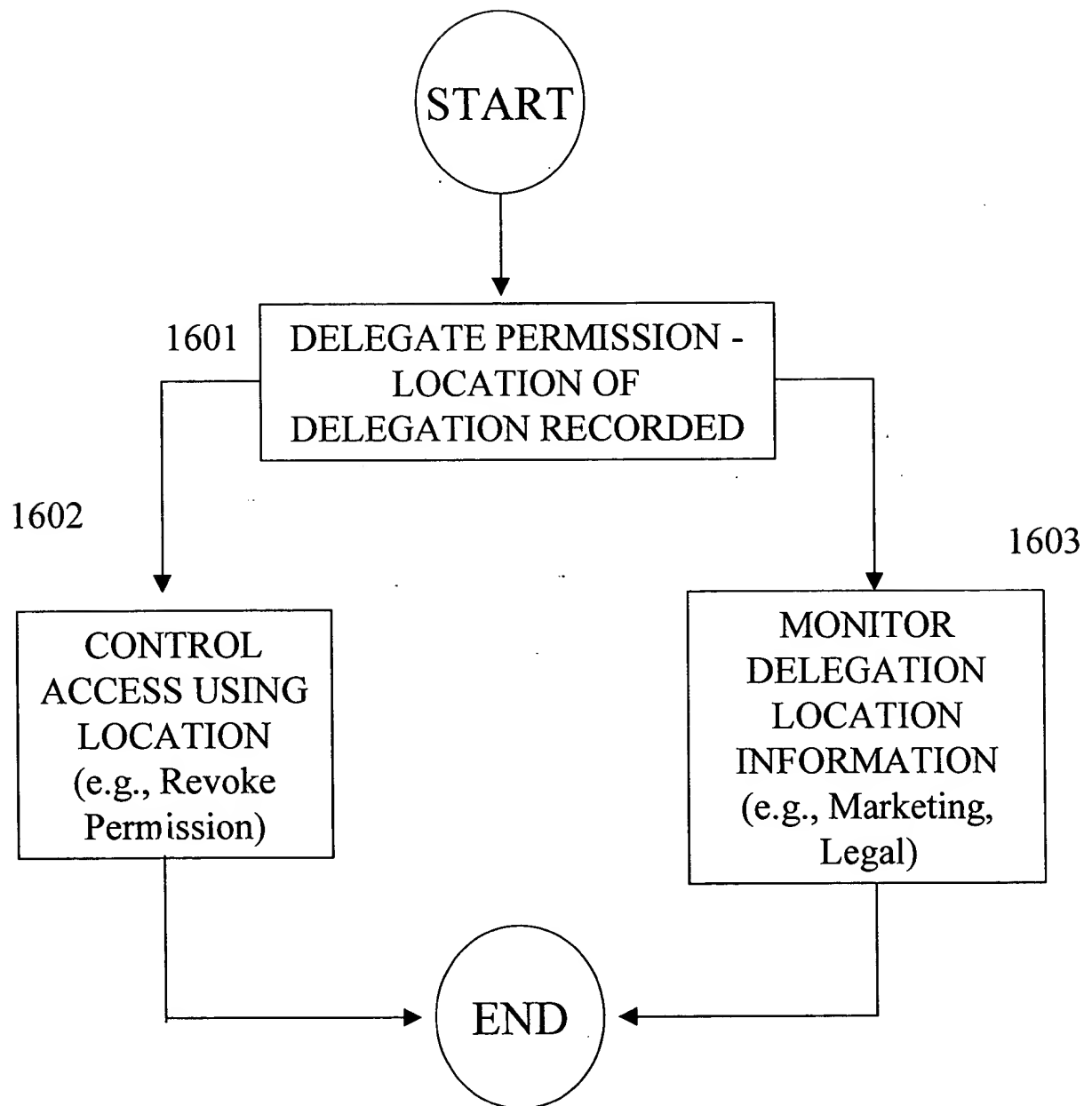


Fig. 17

